Best-practice dingo management: six lessons from K'gari (Fraser Island)

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ABSTRACT

Canids across the world are involved in negative interactions between humans and their interests, with numerous examples of conflict management. K'gari (Fraser Island) and its dingo population are well known for the human-dingo conflict in the tourism and residential scenes. In this article, the successful management of such interactions is described through six key lessons learnt from over 20 years of adaptive management and its evolution into the current *Fraser Island Dingo Conservation and Risk Management Strategy*. These are (1) focus on people first, (2) understand local dingo ecology, (3) identify the pathway to intervention, (4) target dingo impacts, and prioritise behaviours and individuals, (5) work to a strategy (adaptive management), and (6) collaborate and engage with external stakeholders. This best-practice approach may be useful to managers of other populations of canids.

Key words: adaptive management, aversive conditioning, *Canis familiaris* (dingo), human-wildlife conflict, non-lethal control, wildlife management.

DOI: https://doi.org/10.7882/AZ.2021.001

Introduction

Human-wildlife conflict is ubiquitous around the world as both strive to survive on a planet buffeted by global change including climate warming, land clearing, invasive species, urbanisation, extreme weather events and resource extraction (Lamarque *et al.* 2009; Lozano *et al.* 2019). One of the most pervasive human-wildlife conflicts arises when wild predators interact with people or their livestock. Retaliatory killing, coordinated lethal control, and other forms of predator control and management occur in many places, often leading to additional social conflict as people debate the appropriateness of the various tools used to manage these conflicts. A greater understanding of successful management approaches can be used to reduce conflict and conserve wild predators.

The iconic Australian dingo (*Canis familiaris*; Jackson *et al.* 2017) is the largest terrestrial predator on the mainland and is considered native across all jurisdictions despite its relatively recent arrival around 5,000 years ago (Johnson 2006). Dingoes are lethally controlled across much of their range to mitigate their impacts on livestock (Fleming *et al.* 2012; Allen and West 2013). But on National Park estate in Queensland and most other states, dingoes are protected and considered to be an important part of the natural ecosystem (EHP 2013; Fleming *et al.* 2020). They can, however, pose serious safety risks to humans in parks with relatively large visitor numbers, where people and dingoes frequently interact (Allen *et al.* 2012). Dingoes regularly threaten or bite people in such parks, including Fraser Island (K'gari) on the south-east coast of Queensland, where the most serious incident was the attack and subsequent death of a nine year old boy in 2001 (Burns and Howard 2003; Thompson *et al.* 2003). Managing human-dingo interactions in such a complex environment requires careful and active management of both humans and dingoes in line with a variety of competing management goals and stakeholder interests. The dynamic nature of these interactions, goals and interests means that dingoes cannot simply be 'left alone'.

Here, I outline the socio-ecological context of dingo management on K'gari (Fraser Island) and summarise six key lessons learned by managers over the last 20+ years of formal dingo management on the island. My aim is to use these lessons to illustrate some general dingo management principles that may be helpful in managing human-canid interactions in other locations.

The K'gari (Fraser Island) context

K'gari (Fraser Island) was listed as a World Heritage area and a place of great ecological and cultural significance in 1991 (Harmon-Price 1995; Wardell-Johnson *et al.* 2015). It is a section of the Great Sandy National Park and is

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situated ~230 km north of Brisbane on the east coast of Australia. At 166,038 ha, it is the world's largest sand island, boasting permanent water resources with regular rainfall, a range of vegetation types and ecosystems, and ~230 recorded fauna species including the dingo. The island has been inhabited for thousands of years by the Traditional Custodians (Butchulla Peoples') who locally refer to wild dingoes as 'wongari'. Since European arrival, many parts of the island have been logged, sand mined, and even grazed by livestock – activities which had all ceased by 1990 (Harmon-Price 1995; Wardell-Johnson *et al.* 2015). K'gari now hosts 350,000+ visitors annually (Queensland Government 2019). Although almost all of the island is National Park covered in forest, wetlands, heath or woodland, there are also ~500 residential dwellings located within six main townships and tourist areas, an ambulance station, police station, and three main Queensland Parks and Wildlife Service & Partnerships (QPWS&P) ranger bases. These different land uses are associated with different land tenures which are each accompanied by different legislation and associated policies. These differences mean that the dingo's status and, as a consequence, management obligations can vary across different parts of the island that otherwise look the same. In some areas (i.e. most bushland areas) dingoes are protected under the *Nature Conservation Act 1992* and the *Recreation Areas Management Act 2006*. In other areas (i.e. residential areas) they are declared pest animals or 'restricted matter' under the *Biosecurity Act 2014*.

The K'gari (Fraser Island) section of the Great Sandy National Park is cooperatively managed by the Department of Environment and Science (DES) through QPWS&P and the Butchulla Prescribed Body Corporate entities. These entities are Butchulla Aboriginal Corporation (BAC) and Butchulla Native Title Aboriginal Corporation (BNTAC). Policy and strategy decisions about dingo management are made in consultation with both Corporations and other interested groups. In practice, dingoes in all areas on the island are typically managed as though they are a protected species.

Dingoes on the island have significant conservation value as a key part of the island's ecosystem, cultural identity and tourism drawcard (Archer-Lean *et al.* 2015; Carter *et al.* 2017). They are also considered to be a genetically distinct population (Cairns 2014; Conroy *et al.* 2017) relatively free of genetic introgression with modern domestic dogs (Wilton 2000; Stephens *et al.* 2015).

The island's population of dingoes has lived in and around K'gari's changing human populations and impacts for many centuries. The current population size is estimated to be between 100 and 250 individual animals depending on the time of year, in approximately 19–25 packs or groups (Corbett 1998; Appleby and Jones 2011; but see Allen *et al.* 2015 for a summary of all previous population estimates). Several of these groups live in close proximity to people and tourist areas along the eastern beach, and are supplemented by intentional and inadvertent feeding (Behrendorff *et al.* 2018b; Deaux *et al.* 2018) (Fig. 1). Negative human-dingo interactions occur on a fairly regular basis. Minor interactions include loitering or stealing food and major interactions include attacking and biting people, occasionally leading to hospitalisation (Allen *et al.* 2012; Appleby *et al.* 2018; Tapply 2018). Such serious interactions occur relatively infrequently, but warrant considerable effort to minimise them (Appleby *et al.* 2018). One of the main difficulties for risk management and conservation efforts is the need to balance public safety with the value placed on the 'natural' experience humans seek to have with the dingoes. Unreasonable public expectations about dingoes further complicate effective management. For example, dingoes are normally lean (i.e. some ribs or even hips will be visible) and their narrow ventral chest area exacerbates their appearance of leanness (Fig. 2). Like most wild animals, however, a substantial number of individuals do die each year of natural causes such as starvation or intraspecific fighting (Behrendorff *et al.* 2018a) (Fig. 3); yet many people feel that dingoes should be fatter and not allowed to die of natural causes under natural conditions, leading people to illegally feed dingoes or lobby government to create supplementary feeding programs or care facilities (Hoffman 2010a, b; SFID 2013; Bryant 2013, 2016). Positive interaction with dingoes is a desirable experience people expect to have in places such as K'gari (Corbett 1998; Burns 2009). Thus managers have the difficult task of enabling positive wild dingo interactions and managing public expectations while minimising legitimate public safety risks (Tapply 2018).

Lesson 1 – Focus on people first

There is public disagreement over what should be the target of management activities: should managers be targeting human behaviour or dingo behaviour (Thompson *et al.* 2003; Burns *et al.* 2011; Carter and Palmer 2017)? Wild dingoes do what dingoes have always naturally done and will continue to do, and it is more practical and logistically feasible to manage the human factors around dingoes than it is to try and manage dingoes themselves. QPWS&P mitigates some of the risks by first focusing on people management before individual dingo and population management (Thompson *et al.* 2003; EHP 2013). People management includes fencing some townships and resorts, along with other human-use areas such as appropriate camp and picnic grounds; temporary campground and visitor site closures in areas and seasons of high risk, and fines for deliberate feeding or interference of dingoes. Dingo management alone does not resolve the problems that human behaviour has created, and that threaten dingo conservation (O'Neill *et al.* 2017).

Acknowledging human behaviour as a first step in resolving interactions between people and dingoes can be achieved in part by understanding that people come

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Figure 1. Human-tolerant K'gari wongari with supplementary anthropogenic food source. Photo credit: Jenna Tapply

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Figure 2. Dingoes are naturally lean with a narrow ventral chest area like this tagged adult lactating female from northern K'gari photographed from a distance after she raided marine turtle nests with her family group. Photo credit: Linda Behrendorff

Figure 3. K'gari dingo brothers partaking in dominance fighting against each other show the potential power and risk in their behaviour. Photo credit: Jenna Tapply

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from a diverse range of 'cultures' and express diverse opinions, beliefs, practices, and perspectives. That, in turn, influences peoples' behaviour towards and social expectations around dingoes, requiring diverse management responses. Collaborative QPWS&P and Butchulla public education initiatives have involved increased ranger (face to face) presence, signage, web-based interpretive materials, and the distribution of educational brochures and materials (Tapply 2018) to provide a variety of tangible resources to promote 'dingo-safe' behaviours and expectations. Managers have found great success in reducing human-dingo conflict and risk by focussing on people first (EHP 2013; Tapply 2018).

Lesson 2 – Understand local dingo ecology

Some aspects of dingo ecology are consistent across populations, such as reproductive cycles and group living behaviour. But other aspects of dingo ecology vary markedly between populations, including diet, movement and home range sizes (Fleming *et al.* 2012; Doherty *et al.* 2019). Understanding local dingo ecology is necessary to ensure that management actions address local realities. On K'gari, dingoes traverse the whole island (Behrendorff and Allen 2016; Baxter and Davies 2018) and their diet is subsidised seasonally by large amounts of stranded marine fauna and marine turtle eggs (Strydom 2004; Behrendorff *et al.* 2018b). Understanding local dingo pack territory boundaries and dingo movements assists with determining appropriate scales for particular management interventions. Understanding dingo diet and seasonal food availability assists with forecasting periods of increased risk to dingoes (Behrendorff *et al.* 2016). Dingoes on K'gari exhibit strong sociality and are frequently observed in pairs or groups (Behrendorff and Allen 2016). When one, usually adult, individual dingo has a history of negative interactions with humans, this can increase the likelihood that a related dingo will also begin to interact negatively with humans. Dominant individuals can also suppress the expression of negative behaviours by subordinate individuals, so if the dominant individual dies, subordinate individuals can sometimes begin to interact negatively with people (L. Behrendorff, unpublished data). Understanding familial relationships and pack dynamics can therefore assist with forecasting increased risks from particular individual dingoes to people.

The *Fraser Island Dingo Management and Conservation Strategy* (*The Strategy*) (EHP 2013) directs that management actions should be at the appropriate scale of the impact. That means management is targeted to an individual dingo's behaviour or a particular situation, rather than population level management. This is partly achieved using camera trap monitoring, tagging individuals, GPS collar deployment, track identification, observations and reports from rangers and public. This collated information indicates areas and movements including seasonal activity, pack structures and movement patterns which all contribute to understanding the local dingo ecology. Managing risk at an individual level encourages maintenance of pack stability by only removing a very low number of aggressive or high risk individuals through consultation, that may influence others or potentially cause tragic circumstances.

Lesson 3 – Identify the pathway to intervention

The most contentious management action undertaken on K'gari is the euthanasia (humane destruction) of a dingo for high-risk behaviour, which has historically occurred at higher rates than for the few individuals annually removed in more recent times (Allen *et al.* 2015). However, a series of events must first occur before a dingo is euthanized, and ongoing experience has shown that there is a clear pathway leading to this point. Familiarisation or attraction leads to habituation or human-tolerance, and without intervention, human-tolerance leads to increasingly negative and higher-risk interactions, ultimately requiring intervention or humane destruction to avert a serious incident or attack (Allen *et al.* 2012). The one thing that nearly all the serious and highly publicised interactions have had in common was the human-tolerance and familiarity of dingoes that had lost their natural wariness around humans. This view has been contested by some (O'Neill *et al.* 2017; Appleby *et al.* 2018), but the pattern is not unique to dingoes (Timm *et al.* 2004; Allen *et al.* 2012, 2015; Coleman *et al.* 2013; Appleby 2015). Moreover, the expression of these behaviours rarely occurs randomly among the dingo population; they occur predictably by individuals which have followed this pathway. In some cases, dingoes can move through these stages in a very short timeframe, progressing from 'naturally wary and shy' to 'boldly approaching people to solicit food' in less than one week (L. Behrendorff, unpublished data). In other cases, dingoes move through these stages over a period of months, or over their first year of life until sexual maturity at around two years of age (L. Behrendorff, unpublished data).

While human safety is a key concern with this human-tolerance pathway, there are also welfare concerns for the dingoes involved. Habituated dingoes eat plastics, washing-cloths or fishing hooks, and also increase their risk of being struck and maimed or killed by vehicles, which happens several times annually. Understanding the human tolerance pathway can assist managers in determining the type and timing of management interventions required to prevent dangerous behaviour from arising and reducing risk to people.

The highest levels of dingo human-tolerance on K'gari are most prevalent on the eastern beach (Fig. 4), where

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Figure 4. Map of K'gari and human/dingo interaction sites reported in 2018. Note the points indicated in the interaction map are larger than actual on-ground area (Survey123).

most tourists and visitors to the island spend their time. Unfenced camping areas, deliberate and unintentional feeding of dingoes, continuing food security issues, and recreational activities (such as fishing) ensure ongoing human-dingo interactions. These interactions increase the risk of attacks and injuries to both humans (threatening behaviour or bites) and dingoes (car strikes, humane destruction, injury from human food).

Humane destruction of dingoes for high risk behaviour on K'gari does not occur randomly and is not directed at 'all dingoes' or even 'groups of dingoes' – it is directed at individual dingoes with a confirmed history of multiple high-risk behaviours (Allen *et al.* 2012; Appleby 2015).

Humane destruction records (Fig. 5) highlight the efforts of *The Strategy* in mitigating risk and working towards reducing the number of humane destructions for high risk behaviour. But a reduction in destructions does not necessarily indicate a reduction in risk from individual dingoes if their behaviours are allowed to extend beyond the previous levels of risk management tolerance. In other words, managers may refrain from euthanizing high-risk dingoes and thereby reduce the number of dingoes killed, but this does not reduce the safety risk to people or the likelihood these behaviours will be taught to other dingoes if other mitigation parameters are not put in place. Peaks in the annual number of dingoes humanely destroyed for high-risk behaviour (in 2009, 2011, 2012 and 2014) correspond to the times when people have deliberately fed those dingoes and increased levels of human-tolerance, escalating high-risk behaviours and interactions, and ultimately leading to dingoes being destroyed. By intervening early to prevent familiarisation and human-tolerance, managers can prevent dingoes from developing high-risk behaviours, thereby protecting dingoes and people from otherwise inevitable harm.

Lesson 4 – Target impacts, and prioritise behaviours and individuals

One of the fundamental principles of wildlife management is that management actions should target impacts, not animals (Braysher 1993, 2017). For example, in poison baiting programs conducted against dingoes on the mainland, managers should be attempting to reduce or eliminate dingo predation of livestock or threatened species, not eliminating dingoes per se (Allen 2017). For dingoes on K'gari, managers attempt to reduce or eliminate dingo attacks on people, and do not attempt to reduce or eliminate dingoes themselves, a focus clearly expressed in the *The Strategy* (EHP 2013) and evidenced by the many management actions that seek to reduce negative human-dingo interactions and alter dingo and human behaviour. For example:

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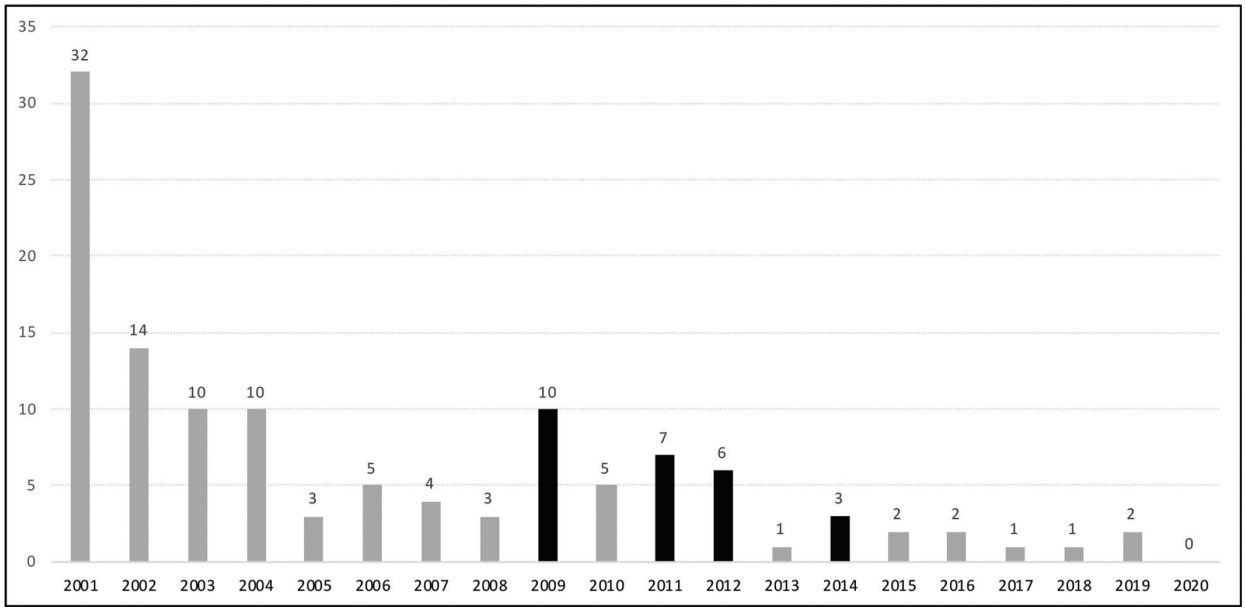

Figure 5. The numbers of dingo destructions for high-risk behaviour on Fraser Island, 2001 - 2020. Spikes (shown in black) in 2009, 2011, 2012 and 2014 directly arose from illegal feeding and interaction activities by small numbers of people.

1. Public education campaigns including social media, physical display boards, web-based information, junior ranger programs and face-to-face communication with rangers;

2. Implementing restrictions on leaving food unsecured, including issuing infringement notices (fines of up to $2,135 now apply for deliberately feeding or interfering with dingoes);

3. Temporary closure of campgrounds and visitor-use areas;

4. Separating dingoes from residential communities and high-use visitor areas with exclusion fencing;

5. Fencing waste transfer stations and food consumption areas;

6. Encouraging personal dingo-safe behaviours when outside these fences; and

7. Trialling aversive geofencing devices and aversive conditioning tools and other deterrents (e.g. Edgar *et al.* 2007; Appleby *et al.* 2017).

These management actions focus on preventing the development of high-risk behaviours in individual dingoes. If the management actions that target a reduction in negative human-dingo interactions (e.g. education campaigns, campground closures) have been exhausted and individual dingoes persist in expressing high-risk behaviour towards people, then management activities target the specific individual/s (e.g. aversion collars and deterrents) with the aim of altering their behaviour. Humane destruction may occur after a consultative process, if the aforementioned actions are unsuccessful and the high-risk behaviours continue to escalate. This approach is successful in eliminating the risks posed by individual dingoes in almost all cases, and very few individual dingoes are now euthanized for high-risk behaviour (Allen *et al.* 2012). In extreme cases in the past, such as the euthanasia of 31 dingoes in April-May 2001 following the death of Clinton Gage (Thompson *et al.* 2003), management actions targeted particular high-risk groups or demographics. Such 'ratcheting up' of management actions from first targeting behaviours, to impacts, to individuals, and then to groups is consistent with best-practice ethical principles of constraining harm to the fewest number of dingoes possible to achieve the objective of reducing risk (Braysher 2017; Dubois *et al.* 2017; Proulx 2018; Allen and Hampton 2020).

While an analysis of the interaction data suggests that interactions involving dingoes approaching people or showing signs of aggression occur regularly (Allen *et al.* 2012; Appleby *et al.* 2018), it is essential to keep these data in perspective. Around 2% of K'gari is accessed by the general public and residents, leaving 98% for dingoes and other wildlife to perform their ecological functions (Fig. 6). Also, of the 350,000+ people that visit K'gari each year, only ~0.12% (n = 483) of these visitors experience a reportable, negative interaction with dingoes, and of these, only 0.02% were involved in high risk or threatening interactions (QPWS&P interaction data for 2018).

Lesson 5 – Working to a strategy (adaptive management)

Dingo management on K'gari has not been haphazard or random, but has been directed by a formal dingo management strategy since the early 1990s. The Queensland Government's *Fraser Island Dingo*

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Figure 6. Dingo on beach, K'gari. Photo credit: Jenna Tapply

Conservation and Risk Management Strategy of 2013 builds on these historic dingo management strategies and what has been learned from implementing them, and is informed by an extensive body of peer reviewed research and independent scientific review (Allen *et al.* 2012). It has also been informed by public and stakeholder consultation. It acknowledges that visitor management is an integral step towards dingo conservation and risk mitigation. The strategy's vision for the future is for K'gari to support a sustainable and healthy wild dingo population that is safely appreciated by all stakeholders.

The strategy was not produced overnight. It represents an evolving and collaborative 'work in progress' over a 24-year period and is delivered through an Implementation Plan containing five programs with defined deliverables fundamental to dingo/human risk management and dingo conservation on the island (EHP 2013).

1. *Risk intervention* – the on-ground actions to reduce the number of negative interactions,

2. *Communication and education* – promotion of dingo conservation and safety messages, and influencing people's attitude and behaviour,

3. *Research* – to support management,

4. *Compliance* – to support risk intervention, communication and education, and research programs, and

5. *Evaluation and review* – assessment and continuous improvement, auditing and review.

Each program is regularly evaluated and reported on to improve or adapt elements as needed. The most recent review was conducted by the Queensland Government's Chief Scientist in September 2019. The management approaches within the strategy's Implementation Plan address the many facets of human and dingo management, such as risk intervention and education, and provide a mechanism for reducing the likelihood of high-risk interactions.

Risk assessments are conducted by specialist rangers four times a year at 65 sites including all QPWS&P day-use and camping areas, private accommodation, community and other visitor-use or residential facilities. These reports inform the annual reporting requirements. The risk assessments are an effective tool for identifying potential risks and informing risk response. Where a high-risk location is identified, actions are taken to reduce risks, such as installation of warning signs, increasing ranger presence, increasing education and

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communications, or implementing temporary closure of camping grounds, visitor sites or walking tracks. Working to such a clearly defined strategy helps to identify and eliminate risks to dingoes and people.

Lesson 6 – Collaboration and engagement

Collaboration and engagement is the key to achieving the desired outcomes of the strategy. It is difficult to manage ongoing risk in the human-wildlife interface if there is distrust. For example, while management organisations (QPWS&P & Butchulla Prescribed Body Corporations) are advocating for minimal contact and separation to leave dingoes wild, other entities are advocating for dingoes to be fed because of a perception that the animals are starving. This produces mixed messaging that undermines *The Strategy* objectives. Collaboration and partnership with numerous stakeholders is therefore a regular part of management procedure.

The QPWS&P managers actively collaborate and regularly engage with Traditional Custodians and Native Title holders (the Butchulla Peoples'), residents, commercial operators (resorts, tour operators, taxi), professional fishers, universities, four-wheel drive and fishing groups, media outlets, other Federal, State and Local government departments, Fraser Island Natural Integrity and Alliance conservation group, and advocacy groups such as Fraser Island Defenders Organisation and Save Fraser Island Dingoes Inc. whom all have concerns and a vested interest regarding the risk and/or conservation of the island dingo population.

The Strategy review and recent Implementation Plan review were part of collaborative processes and have resulted in progressed collaborative dingo research projects on morphology, population, DNA and social sciences (Table 1 - highlights on all the empirical papers published over the last 10 years). This effort has produced ongoing professional collaborations and resolved some of the highlighted public issues by providing field-collected dingo data.

Specific K'gari dingo working groups have been formed to assist in meeting objectives and manage concerns. Island users and stakeholders all contribute to the risk management of humans and, in turn, the conservation of the island's dingoes.

Conclusion

The six lessons outlined above—(1) focus on people first, (2) understand local dingo ecology, (3) identify the pathway to intervention, (4) target dingo impacts, and prioritise behaviours and individuals, (5) working to a strategy (adaptive management), and (6) collaborate and engage with external stakeholders—are the best-practice approach, that has enabled risk mitigation at the human/wildlife interface on K'gari.

Dingoes rarely pose a threat to humans in the wild. However, under certain circumstances and with the right stimuli, their nature as a predator can override their natural instinct to escape conflict, leading to potentially tragic results. Serious interactions, whilst rare, attract considerable public and media attention, and the nuance and challenges of managing risk to human safety and dingo conservation can, as a result, be lost to a more sensationalist narrative. The focus of *The Strategy* has been to break the negative interaction pathway through a range of risk interventions, education, compliance, collaboration and research activities. Dingoes are an important component of K'gari's functioning ecosystems and are protected and conserved as a population using the six lessons described above.

K'gari management is at the pointy end of the issue, successfully using *The Strategy* to concentrate on human influences and on the behaviour of individual dingoes for risk mitigation and the low number of high risk interactions as opposed to behaviour management at a population level. It is vital for the economic viability of human enterprises, as well as the conservation of dingoes and other wildlife populations, that effective monitoring and management of negative interactions and associated influences is managed through a holistic approach to minimise the impact on both dingoes and humans, while still achieving the goals of effective management.

These lessons illustrate a range of general dingo/human interface management principles that have ensured we are moving towards minimising high risk interactions, and may be helpful in managing the impacts of dingoes in other contexts, reducing conflict and improving conservation outcomes.

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Table 1. All the empirical papers published over the last 10 years on K'gari (Fraser Island) dingoes.

2018	**Appleby, R., Mackie, J., Smith, B., Bernede, L. and Jones, D. 2018.** Human–dingo interactions on Fraser Island: an analysis of serious incident reports. *Australian Mammalogy* **40**: 146-156.
	Baxter, G. and Davies, N. 2018. Movements of dingoes on K'gari-Fraser Island: implications for management. *Australasian Journal of Environmental Management* **25**: 132-146.
	Behrendorff, L. 2018. Clever girl? An observation of innovative prey handling by a dingo (*Canis dingo*). *Pacific Conservation Biology* **24**: 194-197.
	Behrendorff, L. 2018. A prickly subject: innovative handling of a difficult prey. *Australian Mammalogy* **40**: 294-296.
	Behrendorff, L., Belonje, G. and Allen, B.L. 2018. Intraspecific killing behaviour of canids: how dingoes kill dingoes. *Ethology, Ecology and Evolution* **30**: 88-98.
	Behrendorff, L., Leung, L.K.-P. and Allen, B.L. 2018. Dingo utilisation of stranded marine fauna washed ashore on K'gari (Fraser Island), Australia. *Australian Journal of Zoology* **66**: 128-138.
	Cairns, K.M., Shannon, L.M., Koler-Matznick, J., Ballard, J.W.O. and Boyko, A.R. 2018. Elucidating biogeographical patterns in Australian native canids using genome wide SNPs. *PLOS ONE* **13**: e0198754.
2017	**Allen, B.L., Behrendorff, L., Willsher, L., Kaluza, J. and Oakey, J. 2017.** Recent invasion of European red foxes (*Vulpes vulpes*) on to Fraser Island (K'gari) and South Stradbroke Island. *Austral Ecology* **42**: 752-758.
	Conroy, G., Ogbourne, S., Lamont, R., Wardell-Johnson, A. and Bridges, L. 2017. *A baseline genetic analysis of the K'gari-Fraser Island dingo population*. University of the Sunshine Coast: Sippy Downs, Queensland.
	Déaux, E.C., Crowe, T. and Charrier, I. 2017. Recreational fishing alters dingo foraging behavior on Fraser Island. *Journal of Wildlife Management* **82**: 85-92.
	Appleby, R., Smith, B., Mackie, J., Bernede, L. and Jones, D. 2017. Preliminary observations of dingo responses to assumed aversive stimuli. *Pacific Conservation Biology* **23**: 295-301.
	Carter, J., Wardell-Johnson, A. and Archer-Lean, C. 2017. Butchulla perspectives on dingo displacement and agency at K'gari-Fraser Island, Australia. *Geoforum* **85**: 197-205.
2016	**Behrendorff, L. and Allen, B.L. 2016.** From den to dust: longevity of three dingoes (*Canis lupus dingo*) on Fraser Island (K'gari). *Australian Mammalogy* **38**: 256-260.
	Behrendorff, L., Leung, L.K-P., McKinnon, A., Hanger, J., Belonje, G., Tapply, J., Jones, D. and Allen, B.L. 2016. Insects for breakfast and whales for dinner: the diet and body condition of dingoes on Fraser Island (K'gari). *Scientific Reports* **6**: 23469.
2015	**Allen, B.L., Higginbottom, K., Bracks, J.H., Davies, N. and Baxter, G.S. 2015.** Balancing dingo conservation with human safety on Fraser Island: the numerical and demographic effects of humane destruction of dingoes. *Australasian Journal of Environmental Management* **22**: 197-215.
2013	**Diddums, L., Behrendorff, L. and Tapply, J. 2013.** *Fraser Island dingo population study: Stage 3, scat analyses*. Department of National Parks, Recreation, Sport and Racing, Queensland Government: Maryborough, Queensland.
	Baxter, G. and Davies, N. 2013. *Tracking dingoes on Fraser Island: final report on Stage 2 of the Dingo Population Study*. The University of Queensland: Brisbane, Queensland.
	Appleby, R., Smith, B. and Jones, D. 2013. Observations of a free-ranging adult female dingo (*Canis dingo*) and littermates' responses to the death of a pup. *Behavioural Processes* **96**: 42-46.
2012	**Allen, B.L., Boswell, J. and Higginbottom, K. 2012.** *Fraser Island dingo management strategy review: report to Department of Environment and Heritage Protection.* Ecosure Pty Ltd: West Burleigh, Queensland.
2011	**Appleby, R. and Jones, D. 2011.** *Analysis of preliminary dingo capture-mark-recapture experiment on Fraser Island: final report to Queensland Parks and Wildlife Service*. Griffith University: Nathan, Queensland.
2010	**Hesse, A. 2010.** *Fraser Island dingo population study: interim report Stage 1*. Queensland Parks and Wildlife Service, Department of Environment and Resource Management: Eurong, Fraser Island, Queensland.

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Acknowledgements

I acknowledge the Butchulla Peoples' as K'gari's Traditional Custodians and Native Title holders. DES and QPWS&P staff, Traditional Custodians and stakeholders have actively contributed to the ongoing conservation and risk management of K'gari's wongari population. Thank you to the colleagues and anonymous reviewers who provided valuable comments on earlier versions of the manuscript.

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